## Polarizing Optical Fiber

**APPLICATIONS:** All-Fiber Polarizers; Fiber Lasers; Single-Frequency Laser Transmission; Interferometry; Fiber Pigtails; Fiber Delay Lines

### How it Works?

A Polarizing Fiber selectively attenuates the light propagating along one polarization axis (Fast Axis) and preserves only the polarized light along the other principal axis (Slow Axis).

Transmission spectra showing two separate cut-offs for the polarization modes in the fast and slow axes at different spectral positions.

- **Design wavelength** ($\lambda_{op}$): Wavelength at which the fiber is typically used.
- **Polarizing Bandwidth** ($\Delta \lambda$):
  - $> 20$ dB short wavelength edge
  - $< 1$ dB long wavelength edge

### Specifications

<table>
<thead>
<tr>
<th>Typical Polarization Performance</th>
<th>Other Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational Wavelength (nm)</td>
<td>1064</td>
</tr>
<tr>
<td>Polarizing Bandwidth (nm)</td>
<td>$&gt; 80$</td>
</tr>
<tr>
<td>Extinction Ratio (dB) @1064 nm</td>
<td>$&gt; 30$</td>
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<tr>
<td>Attenuation (dB/m) @1064 nm</td>
<td>$&lt; 0.02$</td>
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<tr>
<td>MFD (µm) @1064 nm</td>
<td>8 ± 1</td>
</tr>
<tr>
<td>Cladding Diameter (µm)</td>
<td>125 ± 1</td>
</tr>
<tr>
<td>Minimum Bend Diameter (cm)</td>
<td>$&gt; 2$</td>
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</table>

The deployment of the PZG fiber is key to its performance.

### 3 Case Studies:

- **A) All-Fiber Polarizer**
  - 60mm (5m)

- **B) Delay Line**
  - 200m (120mm)

- **C) Single-Frequency Laser Transmission**
  - 20m straight = 19+1m (+5m/80mm)

**Illustration:**

- Pigtails: 1-1m
- Coating Diameter: 80mm
- Coating Length: 5m

### Other Polarizing Wavelengths Available

- 830 nm
- 1310 nm
- 1550 nm

For more information: contact.photonics@ixblue.com